Rice University
Civil and Environmental Engineering

CEVE 481 Senior Design
Fall 2016 Syllabus

Course Information

Welcome to Senior Design. The intent of this course is to provide real world project experience. You will have real practitioners in class to discuss with you various perspectives including civil engineers, an architect, project engineers from a civil, structural, and MEP firm, a surveyor, a geotechnical engineer, an environmental engineering expert and others. You will also hear from practicing engineers related to your role in the project.

A group of related projects are being suggested that are typical development projects that allow for each participant to work in an area where they have interest. It is important that each one of you participate and play a significant role in your team's report and presentations. We have set this up based on conversations with class representatives at the end of last year and over the summer. There will be 6 teams of 3 and 3 projects. Two teams will work on each project. The intent is to share the efforts so that each team provides a significant part of the work resulting in a more complete project.

The class is organized around the process of obtaining and performing a project. In the practice of consulting engineering you will be required to win a project by being able to present your qualifications and convince a prospective client that your team is the best for the job. You will have two weeks to prepare for that step. You will need to form your team, select the project to pursue, obtain information about the project, communicate and coordinate the information within your team, and present your qualifications in an interview presentation before the client. The initial interview presentation will be to introduce your project team, present the project you would like to do and why your team should be chosen, state your team's qualifications to do the project, and describe the role of each of your team members.

After selection, your team will perform and document your design, and gain approval of your design from your client and the regulating authorities. Classes will be organized around this premise. There will be lectures, team meetings and design workshops as part of the class. Participation in all phases of senior design is required. There will be AutoCAD classes offered, the initial class within the normal class period and the other two after hours. You will be asked to take the GIS class offered at the library. These classes are in support of the work that you will need to do to perform the design of the project.

Once you win your project, you will develop a concept design and present it with to the class. These presentations are to be interactive and both the presenters and the class are to participate in commenting on the design. Each team will develop a separate concept from which a final concept will be chosen. These concepts will be taken forward to CEVE 480 next semester.

Next semester in CEVE 480, you will be asked to make two presentations in addition to the ones this semester. The first presentation will be a schematic design report in which you will present your project in a schematic format, discuss your coordination with other design teams and what still needs to be coordinated and designed, where you are on budget and schedule for the project, and any required additional services and special considerations needed to complete

the project. The last presentation will be on the final report on your project. The other project teams will be allowed and encouraged to question your team regarding its presentation to obtain information they need and to question what was presented. A written report will also be required to document the body of work for your project. These presentations along with class participation, your written project report and your project poster will determine your grade in CEVE 480. There will be assignments to complete that must be turned in a project poster that is to be presented in the spring poster contest, a written report, and presentations as part of the work required in the class.

There is a proposed off-campus class meeting at Walter P. Moore and Associates, Inc. corporate headquarters to meet with their engineers for input on design and to answer questions you might have on your role in the project. You are strongly encouraged to visit your project site to observe the site conditions.

Your grades will be based on your class participation, the effectiveness of your team, the quality of your work, the creativeness of your solutions and the quality of the presentations. Class participation is the most important of all. You are expected to participate in class discussions, ask questions about the other teams' projects and presentations, and spend quality team time during that portion of the class.

You are encouraged to find out as much as you can on your own before asking questions. Much of learning is in the pursuit of an answer. We both have another full time job, so have patience if we can't get back to you quickly. You may email or phone us, but please be respectful of our time during the day. Feedback on the presentations and discussions is encouraged.

Grading

The following are the basis of grading:

- Teamwork 10%
- Assignments 10%
- CAD Class 10%
- Class Participation 20%
- Initial Project Competition Presentation 25%
- Concept Design Presentation 25%

In addition, there will be up to 3 extra credit points for those who actively contribute to class discussions on a regular basis, ask quality questions of presenters, and for extra effort on preparing assignments.

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Instructors

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CEVE 481 Senior Design
Fall 2016 Schedule

Revised 8-24-2016 (Subject to Change)

Date 2014	Week No.	TOPIC
Fri 26-Aug	1	***Discussion: Introduction to the class***. – Student Introductions ***Design Project Presentations*** – *Several potential projects for senior design will be presented.* ***Assignment:*** *Write a paragraph on why you chose to be an engineer and what you intend to practice (i.e. environmental, general civil, structural, etc.) and complete initial class survey, Investigate Projects.* ***Instructors*****:** Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 2-Sep	2	***Student Report:*** *Present findings on projects.* ***Discussion: Site Analysis and Design Methods*** *- What considerations are required when addressing development of a site. Discuss projects and teaming* ***Assignment****: Review City of Houston Codes, Design Manual and Environmental Summary Guidance Document, Provide a document discussing the applicable codes and rules for your chosen project.* Prepare teaming and project preference ***Instructors****:* Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 9-Sep	3	***Student Report:*** *Present findings on research of codes and criteria affecting the projects.* ***Discussion: Ordinances, Codes and Design Requirements*** Discuss design rules, ordinances, criteria, codes and design requirements. Submit teaming and project preference in class ***Assignment:*** Prepare presentations ***Instructors:*** Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 16-Sep	4	***Discussion: Senior Project Presentations –*** *Presentation of Senior Project proposals* ***Instructors***: Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 23-Sep	5	***Discussion: Project Engineering Concept Design*** – Discussion of key issues to address prior to starting a project **Assignment**: Review Concept list and create a key issues approach to the project to be reviewed at Sept. 30th class ***Instructors***: Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 30-Sep	6	*Discussion: .* ***Civil Design Case Study*** *– Site design for layout, grading and utilities* *Guest Speaker: Matt Zeve, Chief Operations Officer – Harris County Flood Control District* Assignment: Develop a conceptual site plan showing improvements, utilities, & grading **Instructor:** Charles Penland, Phillip de Blanc, Will Cannady, Jorge Rosales.
Fri 7-Oct	7	***Discussion: AutoCAD*** – The first of 3 classes on CAD training. *Classes 2 and 3 are to be on a date to be scheduled from 5:15 - 6:30 PM. OEDK Computer Lab* ***Instructors:*** Daniel Falkenstine – Walter P. Moore and Associates Training: ***AutoCAD -*** 2nd in series, Daniel Falkenstine , OEDK Computer Lab – 5:15-6:30 PM ***AutoCAD*** – 3rd in series, Daniel Falkenstine, OEDK Computer Lab – 5:15-6:30 PM
Fri 14-Oct	8	***Discussion:*** *Presentation of Site Plan Concept Assignment* *Guest Speaker: Dr. Bedient* ***Instructor*****:** Charles Penland

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Fri 22-Oct	9	***Discussion: Structural and Foundation Design Case Study*** *– gravity load design for building systems* ***Instructors*****:** TBD
Fri 28-Oct	10	***Discussion: Site Remediation Design Case Study*** *– An overview of what will be required on your projects to provide site remediation design.* ***Instructor*****:** Phillip de Blanc, GSI Environmental
Fri 4-Nov	11	*Discussion: AE Team Collaboration Discussion. Assignment: Prepare for the Concept Design Presentations.* *Charles Penland, Phillip de Blanc, Will Cannady*
Fri 11-Nov	12	***Concept Design Presentation of Projects 1 & 2***: Class Discussion follows
Fri 18-Nov	13	***Concept Design Presentation of Projects 3 & 4****:* Class Discussion follows ***GIS Self Taught*** Assignment: Provide list and discussion of best project ideas for each project presented
Fri 25-Nov	14	THANKSGIVING
Fri 2-Dec	15	*Discussion****: Review best ideas*** ***Engineering Ethics – What would you do if…..*** **Instructors**:

Note:
Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All such discussions will remain as confidential as possible. Students with disabilities will need to also contact Disability Support Services in the Ley Student Center.